

## CLAIMS:

1. Ring network being installed as bus network, comprising:

$n \geq 4$  nodes (200-1, ... 200-5); and

5  $n-1$  cable sections (100-1, ... 100-5), in particular optical fibres, each of which including a forward line (105-1, ... 105-4) and a return line (110-1, ... 110-4) for transmitting a signal in opposite directions within said cable section;

10 wherein at least two of said nodes are intermediate nodes (200-2, 200-3, 200-4) being respectively connected between two of said cable sections such that the intermediate nodes are arranged in a sequential order, wherein a network interface (230) of each of said intermediate nodes (200-2, 200-3, 200-4) is connected either between the forward lines (105-1, ... 105-4) or between the return lines (110-1, ... 110-4) of said two connected cable sections for restoring the signal on the respective lines; and

15 wherein the first (200-1) and the last (200-5) of said nodes are respectively connected to only one of said cable sections (100-1, 100-4) and serve for closing the ring network by respectively connecting said return line (110-1, 110-4) with the forward line (105-1, 105-4) of said only one cable section;

20

**characterized in that**

in said at least two sequential intermediate nodes (200-2, 200-3, 200-4) the respective network interfaces (230) are connected alternately between the forward lines  
25 (105-1, ... 105-4) and the return lines (110-1, ... 110-4) of said two connected cable sections.

2. The ring network according to claim 1, **characterized in that** the each of the intermediate nodes (200-2, ... 200-4) comprises at least one connector (210, 220) for being connected said two connected cable sections (100-1, ... 100-4).

3. The ring network according to claim 2, **characterized in that** the at least one connector (210, 220) of each intermediate node (200-2, ... 200-4) comprises a first input terminal (210a) for connecting the forward line (105-1, ... 105-4) of a first one of said two cable sections (100-1, 100-2; 100-2, 100-3; 100-3, 100-4) to the intermediate node, a first output terminal (210b) for connecting the return line of said first cable section, a second input terminal (220a) for connecting the return line of the second one of said two cable sections and a second output terminal (220b) for connecting the forward line of said second cable section to the intermediate node.

4. The ring network according to claim 3, **characterized in that** in the case that the network interface (230) of one intermediate node (200-2, 200-3, 200-4) is connected between said first input (210a) and the second output terminal (220b), said intermediate node comprises a jumper (240) for connecting the second input (220a) with the first output terminal 210b).

5. The ring network according to claim 3, **characterized in that** in the case that the network interface (230) in one intermediate node (200-2, ... 200-4) is connected between the second input (220a) and the first output terminal (210b), said intermediate node comprises a second jumper (240') for connecting the first input (210a) with the second output terminal (220b).

6. The ring network according to claim 3, **characterized in that** at least one of the intermediate nodes (200-2, ... 200-4) comprises a multiplexer (250) for connecting the network interface (230) either between the first input (210a) and the second output terminal (220b) or between the second input (220a) and the first output terminal (210b) in response to a control signal.

7. The ring network according to claim 6, **characterized in that** the multiplexers (250) of subsequent intermediate nodes (220-2 ... 220-4) are controlled by respectively inverted control signals.

8. The ring network according to one of claims 1 to 7, **characterized in that** the first (200-1) and/or the last node (200-5) respectively comprise a loop back terminator (115) for connecting the received forward line (105-1, 105-4) with the received return line (110-1, 110-4).

9. The ring network according to one of claims 1 to 8, **characterized in that** said n-1 cable sections (100-1, ... 100-4) form one cable having appropriate cable connectors for being connected to the connectors (210, 220) of the nodes.

10. The ring network according to one of claims 1 to 9, **characterized in that** the forward (105-1, ... 105-4) and the return line (110-1, ... 110-4) of at least one of said n-1 cable sections (100-1, ... 100-4) are embodied as optical fibres and that the nodes to which said optical fibres are connected comprise at least one fibre optical transceiver FOT (210', 220') for transforming an optical signal on said forward line (105-1...105-4) or on said return line (110-1...110-4) into an electrical signal before being sent to said network interface (230) or for transforming another electrical signal coming from said network interface into another optical signal for being sent to said forward or return line.